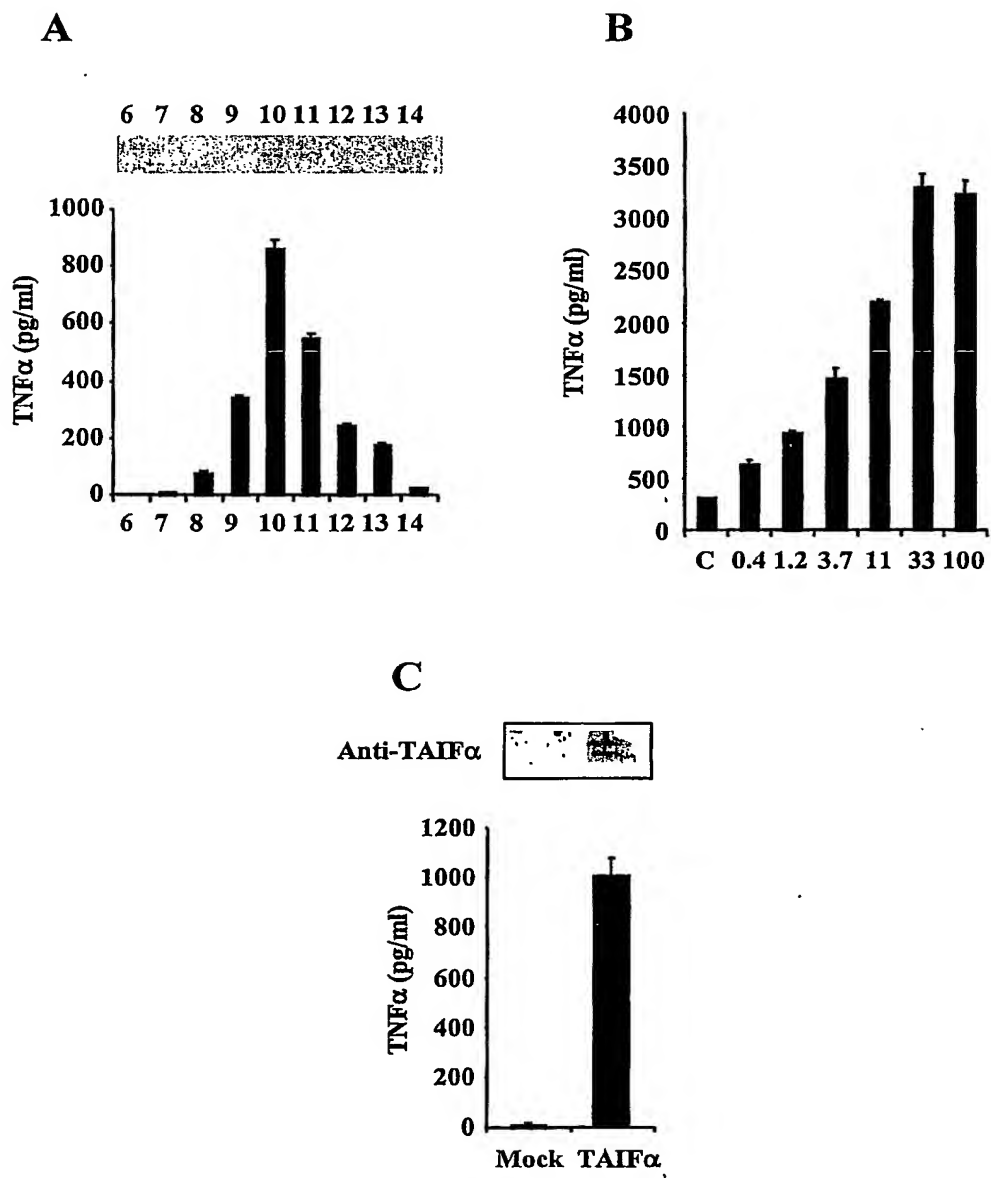**Fig. 1**

A

B

C

Fig. 2

IL-32α   ATGTGCTTCCCGAAGGTCCTCTCTGATGACATGAAGAAGCTGAAGGCCCGAATG------
IL-32β   ATGTGCTTCCCGAAGGTCCTCTCTGATGACATGAAGAAGCTGAAGGCCCGAATG------
IL-32γ   ATGTGCTTCCCGAAGGTCCTCTCTGATGACATGAAGAAGCTGAAGGCCCGAATGGTAATG
IL-32δ   ---------------------------ATGAAGAAGCTGAAGGCCCGAATG------

IL-32α   --
IL-32β   --
IL-32γ   CTCCTCCCTACTTCTGCTCAGGGGGTTGGGGGCCTGGGTCTCAGCGTGTGACACTGAGGAC
IL-32δ   --

IL-32α   --
IL-32β   --
IL-32γ   ACTGTGGGACACCTGGGACCCTGGAGGGACAAGGATCCGGCCCTTTGGTGCCAACTCTGC
IL-32δ   --

IL-32α   -----------CACCAGGCTATAGAAAGATTTTATGATAAAATGCAAAATGCAGAATCA
IL-32β   -----------CACCAGGCCATAGAAAGATTTTATGATAAAATGCAAAATGCAGAATCA
IL-32γ   CTCTCTTCACAGCACCAGGCCATAGAAAGATTTTATGATAAAATGCAAAATGCAGAATCA
IL-32δ   -----------CACCAGGCCATAGAAAGATTTTATGATAAAATGCAAAATGCAGAATCA

IL-32α   GGACGTGGACAGGTGATGTCGAGCCTGGCAGAGCTGGAGGACGACTTCAAAGAGGGCTAC
IL-32β   GGACGTGGACAGGTGATGTCGAGCCTGGCAGAGCTGGAGGACGACTTCAAAGAGGGCTAC
IL-32γ   GGACGTGGACAGGTGATGTCGAGCCTGGCAGAGCTGGAGGACGACTTCAAAGAGGGCTAC
IL-32δ   GGACGTGGACAGGTGATGTCGAGCCTGGCAGAGCTGGAGGACGACTTCAAAGAGGGCTAC

IL-32α   CTGGAGACAGTGGCGGCTTATTATGAGGAGCAGCACCCAGAGCTCACTCCTCTACTTGAA
IL-32β   CTGGAGACAGTGGCGGCTTATTATGAGGAGCAGCACCCAGAGCTCACTCCTCTACTTGAA
IL-32γ   CTGGAGACAGTGGCGGCTTATTATGAGGAGCAGCACCCAGAGCTCACTCCTCTACTTGAA
IL-32δ   CTGGAGACAGTGGCGGCTTATTATGAGGAGCAGCACCCAGAGCTCACTCCTCTACTTGAA

Fig. 3A

IL-32α   AAAGAAAGAGATGGATTACGGTGCCGAGGCAACAGATCCCCTGTCCCGGATGTTGAGGAT
IL-32β   AAAGAAAGAGATGGATTACGGTGCCGAGGCAACAGATCCCCTGTCCCGGATGTTGAGGAT
IL-32γ   AAAGAAAGAGATGGATTACGGTGCCGAGGCAACAGATCCCCTGTCCCGGATGTTGAGGAT
IL-32δ   AAAGAAAGAGATGGATTACGGTGCCGAGGCAACAGATCCCCTGTCCCGGATGTTGAGGAT

IL-32α   CCCGCAACCGAGGAGCCTGGGGAGAGCTTTTGTGACAAG---------------------
IL-32β   CCCGCAACCGAGGAGCCTGGGGAGAGCTTTTGTGACAAGGTCATGAGATGGTTCCAGGCC
IL-32γ   CCCGCAACCGAGGAGCCTGGGGAGAGCTTTTGTGACAAGGTCATGAGATGGTTCCAGGCC
IL-32δ   CCCGCAACCGAGGAGCCTGGGGAGAGCTTTTGTGACAAGGTCATGAGATGGTTCCAGGCC

IL-32α   --
IL-32β   ATGCTGCAGCGGCTGCAGACCTGGTGGCACGGGGTTCTGGCCTGGGTGAAGGAGAAGGTG
IL-32γ   ATGCTGCAGCGGCTGCAGACCTGGTGGCACGGGGTTCTGGCCTGGGTGAAGGAGAAGGTG
IL-32δ   ATGCTGCAGCGGCTGCAGACCTGGTGGCACGGGGTTCTGGCCTGGGTGAAGGAGAAGGTG

IL-32α   --
IL-32β   GTGGCCCTGGTCCATGCAGTGCAGGCCCTCTGGAAACAGTTCCAGAGTTTCTGCTGCTCT
IL-32γ   GTGGCCCTGGTCCATGCAGTGCAGGCCCTCTGGAAACAGTTCCAGAGTTTCTGCTGCTCT
IL-32δ   GTGGCCCTGGTCCATGCAGTGCAGGCCCTCTGGAAACAGTTCCAGAGTTTCTGCTGCTCT

IL-32α   -----------------------------TCCTACGGAGCCCCACGGGGGGACAAGGAG
IL-32β   CTGTCAGAGCTCTTCATGTCCTCTTTCCAGTCCTACGGAGCCCCACGGGGGGACAAGGAG
IL-32γ   CTGTCAGAGCTCTTCATGTCCTCTTTCCAGTCCTACGGAGCCCCACGGGGGGACAAGGAG
IL-32δ   CTGTCAGAGCTCTTCATGTCCTCTTTCCAGTCCTACGGAGCCCCACGGGGGGACAAGGAG

IL-32α   GAGCTGACACCCCAGAAGTGCTCTGAACCCCAATCCTCAAAATGA
IL-32β   GAGCTGACACCCCAGAAGTGCTCTGAACCCCAATCCTCAAAATGA
IL-32γ   GAGCTGACACCCCAGAAGTGCTCTGAACCCCAATCCTCAAAATGA
IL-32δ   GAGCTGACACCCCAGAAGTGCTCTGAACCCCAATCCTCAAAATGA

Fig. 3B

A

```
         1                              Myr
IL-32α   MCFPKVLSDDMKKLKARM-------------------------------------------
IL-32β   MCFPKVLSDDMKKLKARM-------------------------------------------
IL-32γ   MCFPKVLSDDMKKLKARMVMLLPTSAQGLGAWVSACDTEDTVGHLGPWRDKDPALWCQLC
IL-32δ   ----------MKKLKARM-------------------------------------------


         61                             Myr
IL-32α   ----HQAIERFYDKMQNAESGRGQVMSSLAELEDDFKEGYLETVAAYYEEQHPELTPLLE
IL-32β   ----HQAIERFYDKMQNAESGRGQVMSSLAELEDDFKEGYLETVAAYYEEQHPELTPLLE
IL-32γ   LSSQHQAIERFYDKMQNAESGRGQVMSSLAELEDDFKEGYLETVAAYYEEQHPELTPLLE
IL-32δ   ----HQAIERFYDKMQNAESGRGQVMSSLAELEDDFKEGYLETVAAYYEEQHPELTPLLE


         121       Gly
IL-32α   KERDGLRCRGNRSPVPDVEDPATEEPGESFCDK----------------------------
IL-32β   KERDGLRCRGNRSPVPDVEDPATEEPGESFCDKVMRWFQAMLQRLQTWWHGVLAWVKEKV
IL-32γ   KERDGLRCRGNRSPVPDVEDPATEEPGESFCDKVMRWFQAMLQRLQTWWHGVLAWVKEKV
IL-32δ   KERDGLRCRGNRSPVPDVEDPATEEPGESFCDKVMRWFQAMLQRLQTWWHGVLAWVKEKV


         181                             Myr
IL-32α   -----------------------------SYGAPRGDKEELTPQKCSEPQSSK
IL-32β   VALVHAVQALWKQFQSFCCSLSELFMSSFQSYGAPRGDKEELTPQKCSEPQSSK
IL-32γ   VALVHAVQALWKQFQSFCCSLSELFMSSFQSYGAPRGDKEELTPQKCSEPQSSK
IL-32δ   VALVHAVQALWKQFQSFCCSLSELFMSSFQSYGAPRGDKEELTPQKCSEPQSSK
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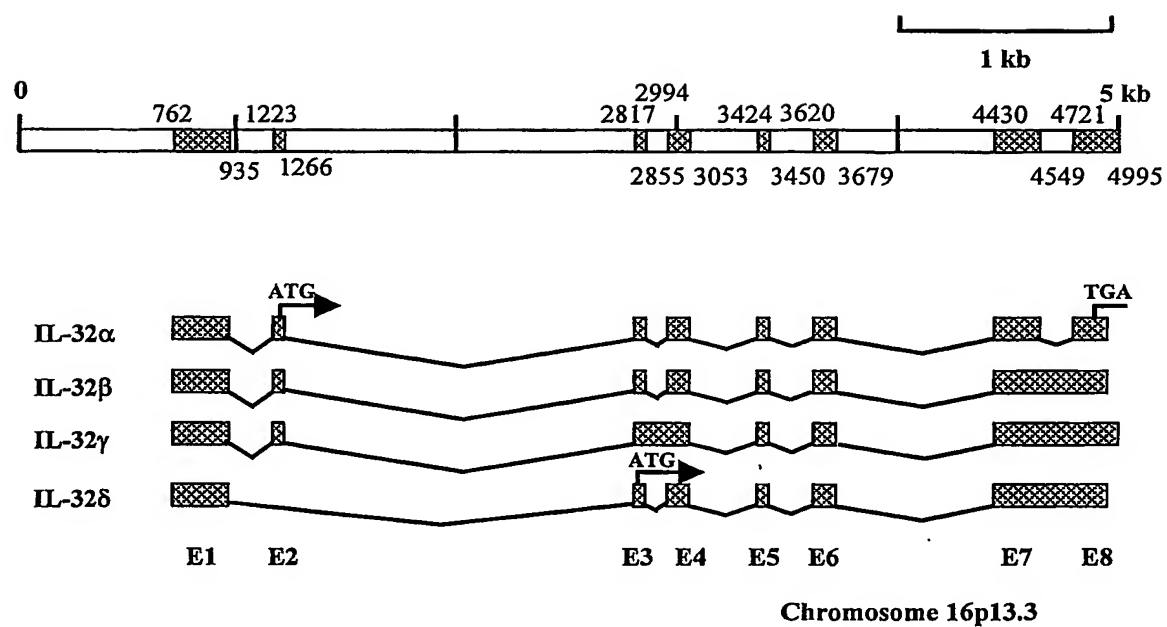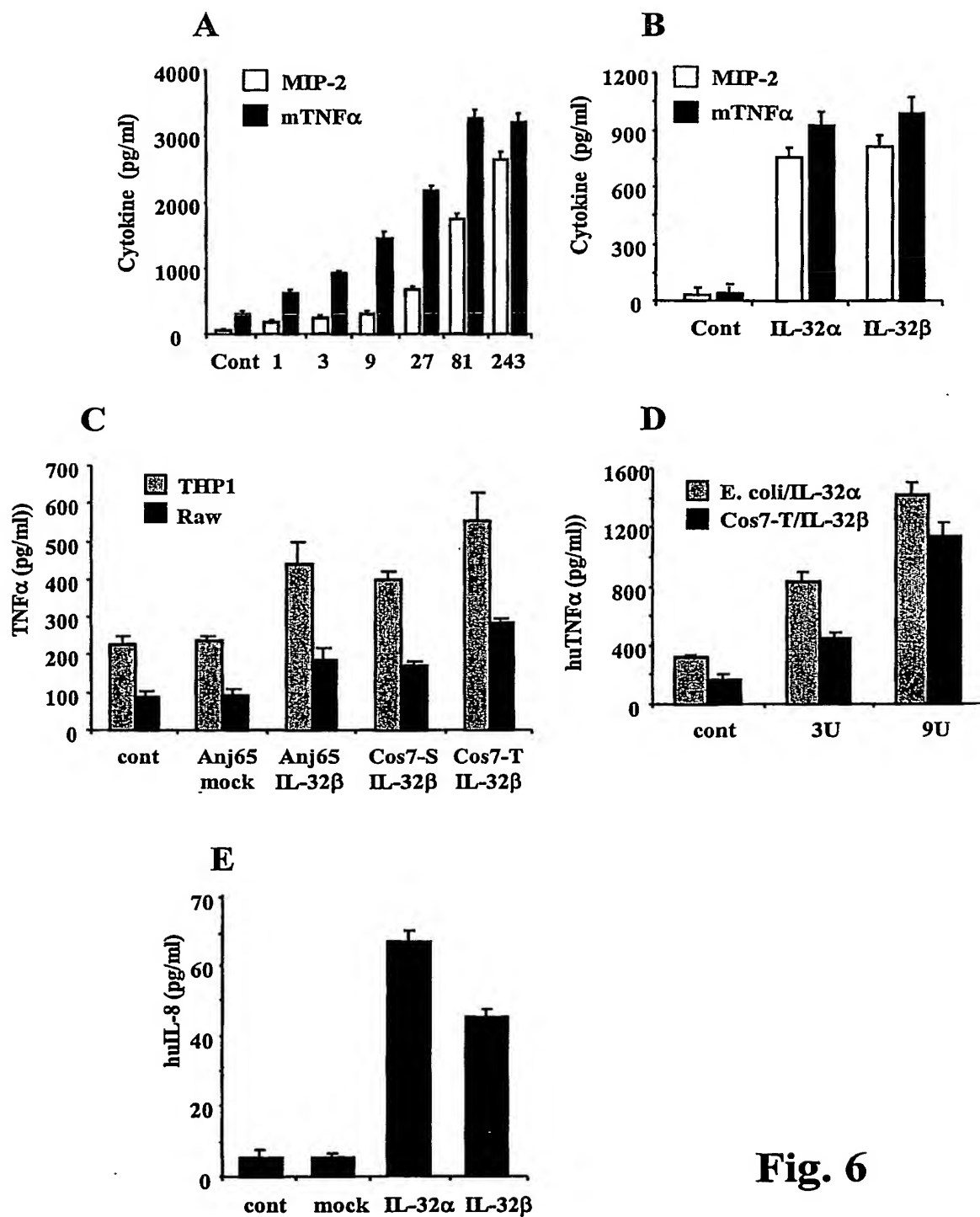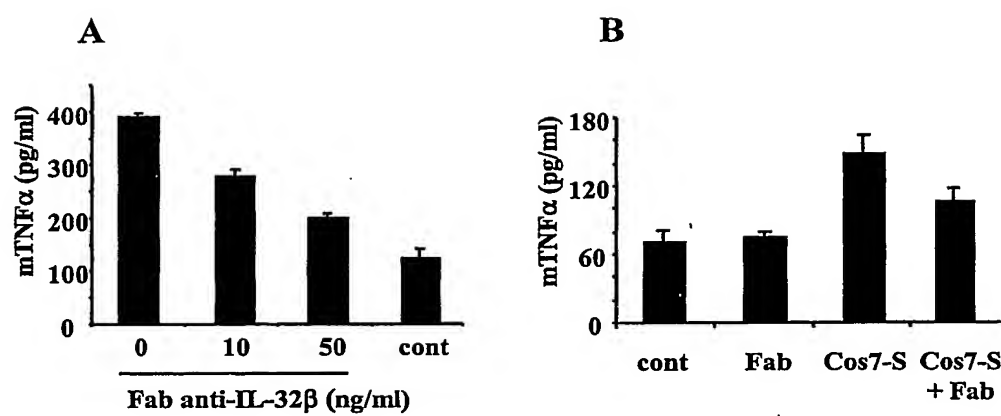
B

```
          1
huIL-32β  MCFPKVLSDDMKKLKARMHQAIERFYDKMQNAESGRGQVMSSLAELEDDFKEGYLETVAA
EqIL-32   MGYPKTSREDNERWKIRFHSTLDRWLDDIEVQSQGEEQVDLGLEDLEEKFSENILDAVEE
BoIL-32   MCFAKGVPYDQASLRSIMHKRVDDFCDKMGNEPE-EAQMEAALDETEEGLSEDICEFIED
Consensus *---*----*------------------*-----------------*---*----*------


          61
huIL-32β  YYEEQHPELTPLLEKERDGLRCRGNRSPV----PDVEDP----ATE--EPGESFCDKVMR
EqIL-32   HHQKNNSESAPLLPDVKPRLRRRAQKSSVLNPEPEGPGILQVEALEAPEPEESFWVRAWR
BoIL-32   HIQENLPES--LQESSPL-LQEARQGVRRRIQRPSV-----SARLEVQNPEESI----WA
Consensus -------*---*-------*------------*------------*---*-**-----*-


          121
huIL-32β  WFQAMLQR-L-QTWWHGVLAWVKEKVVA------LVHAVQALWKQFQS---FCCSLSELF
EqIL-32   SFMGMLQR-LKQRWQAVLA-WVREKVAAGWQA--LCSVAQSINSVLES---FCSYMAGLF
BoIL-32   RALGRFQVIL-QSLQQRC--WDALTWLREKAVTFLEAICSVVKAVLGVLTDFCSSVGQLF
Consensus ------*--*-*--------*-------------*-----------------**-----**


          181
huIL-32β  MSSF---QSYGAPRGDKEELTPQKCSEPQSSK
EqIL-32   RYH---IQV-----------------------
BoIL-32   ---GNLIQV-----------------------
Consensus -------*------------------------
```

<div align="center">

Fig. 4

</div>

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Fig. 9

Fig. 10

A

0 5 15 30 45 60 90 120

IκB

Actin

B

0 5 15 30 45 60 90 120

℗-p38 MAPK

p38 MAPK
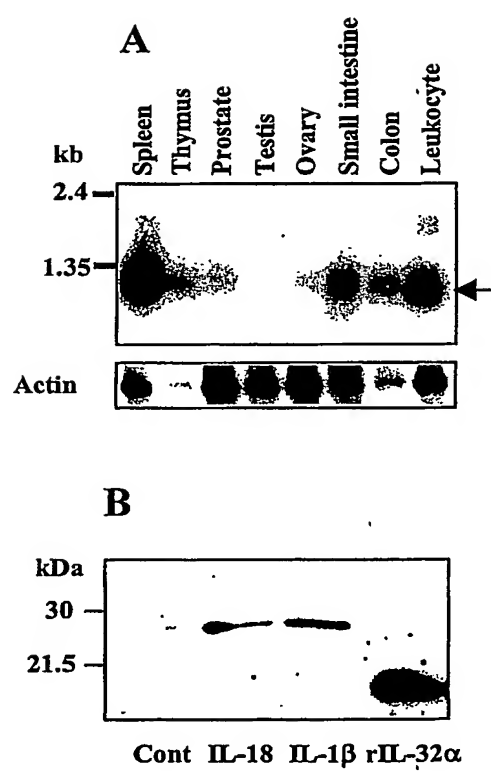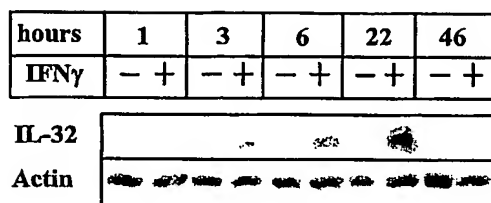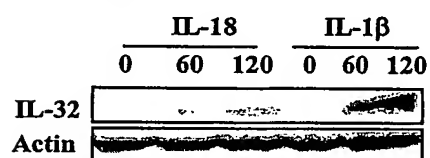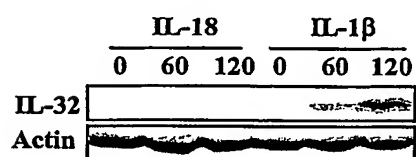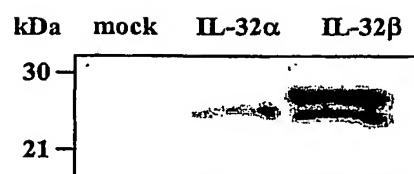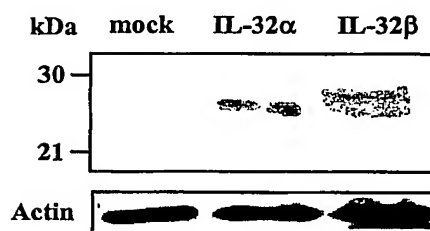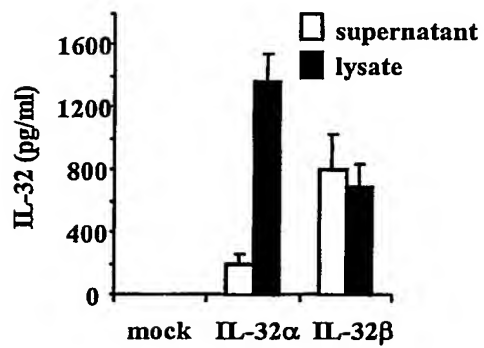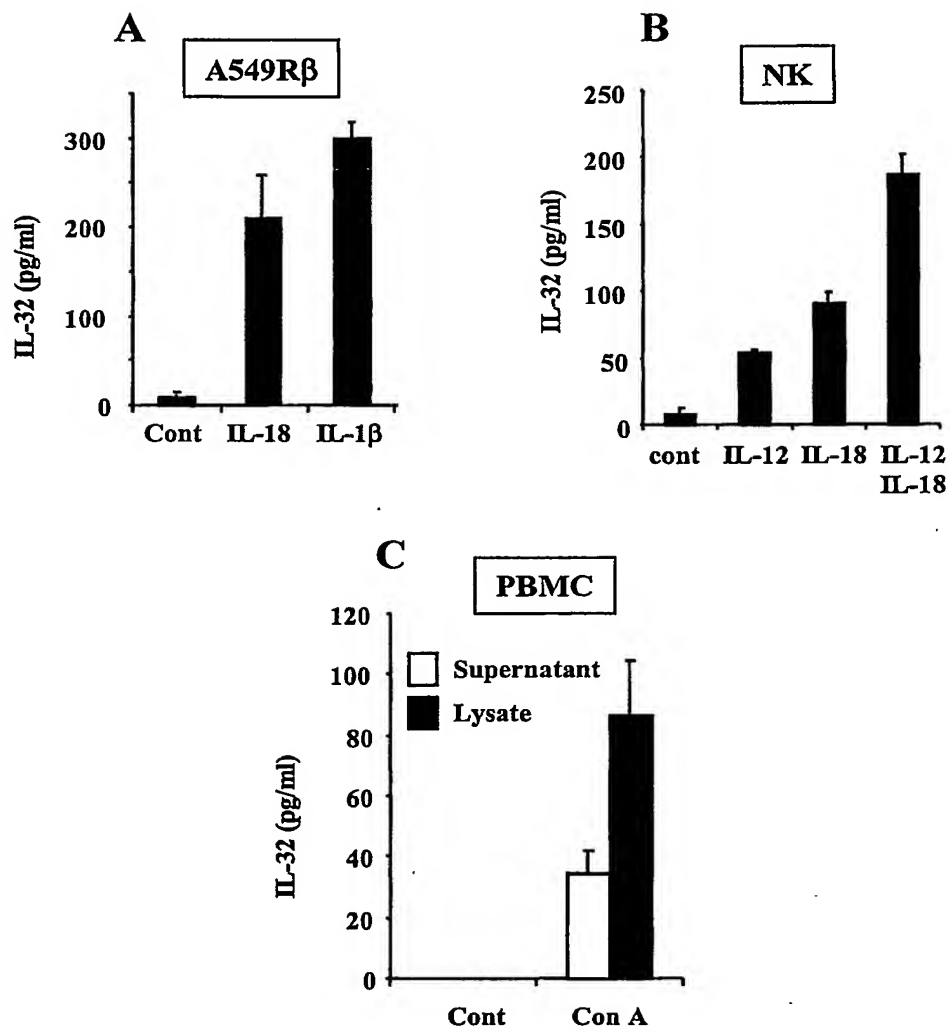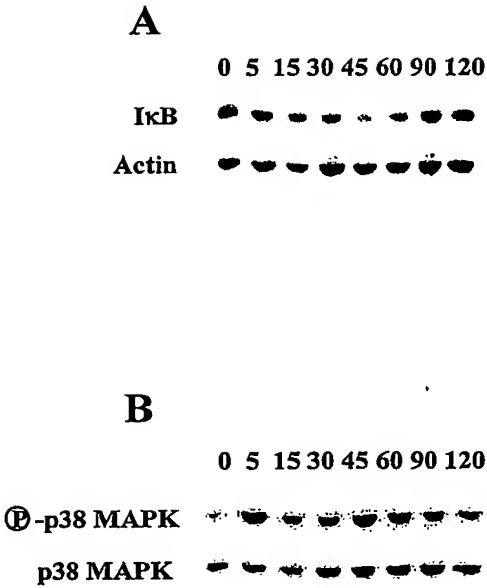
Fig. 11

A
EqIL-32 alpha (SEQ ID NO:18)
MGYPKTSREDNERWKIRFHSTLDRWLDDIEVQSQGEEQVCQCAPTPCSRNLGGRVVTMTMRRKNVPPQVD
LGPLTSPFSQRTFRSDLCHLPTLDLSLTTSLTSLLCTAWPPCPPCTSCSGFLLQV

B
EqIL-32 alpha (SEQ ID NO:19)
GCACGAGCTCGTGCCGTGTGCTGAGAGGCCCTTGGGGCAGGCACAGCCCCTGGAATCCTGAGCTGCCATG
GGCTACCCCAAGACGTCCAGAGAAGACAATGAACGTTGGAAGATCCGATTTCACAGCACTTTAGACCGGT
GGCTTGATGATATCGAAGTTCAATCCCAAGGAGAGGAACAGGTGTGTCAGTGTGCTCCCACGCCCTGCTC
CCGTAACCTCGGGGGTCGGGTGGTCACGATGACGATGAGGAGGAAGAACGTGCCACCTCAGGTCGATTTA
GGCCCTTTGACGTCCCCCCTTTTCACAGAGAACCTTCAGAAGTGACCTTTGCCACCTGCCTACCCTTGACC
TGTCCTTGACCACCTCCCTCACCTCCTTGCTGTGCACAGCCTGGCCACCCTGCCCACCATGCACTTCCTG
CTCAGGTTTCCTTCTGCAGGTCTGACTTGTGGCTCCAGCGCATATGTCTTAATAAAGTTGTG

C
EqIL-32 beta (SEQ ID NO:16)
MGYPKTSREDNERWKIRFHSTLDRWLDDIEVQSQGEEQVDLGLEDLEEKFSENILDAVEEHHQKNNSESA
PLLPDVKPRLRRRAQKSSVLNPEPEGPGILQVEALEAPEPEESFWVRAWRSFMGMLQRLKQRWQAVLAWV
REKVAAGWQALCSVAQSINSVLESFCSYMAGLFRYHIQV

D
EqIL-32 beta (SEQ ID NO:20)
CTGAGAGGCCCTTGGGGCAGGCACAGCCCCTGGAATCCTGAGCTGCCATGGGCTACCCCAAGACGTCCAG
AGAAGACAATGAACGTTGGAAGATCCGATTTCACAGCACTTTAGACCGGTGGCTTGATGATATCGAAGTT
CAATCCCAAGGAGAGGAACAGGTCGATTTAGGCCTAGAAGACCTGGAGGAAAAATTCAGTGAAAACATTC
TTGACGCCGTGGAGGAGCACCATCAGAAGAACAACTCAGAATCTGCGCCTTTACTTCCTGACGTGAAGCC
CAGGTTACGTCGCAGAGCTCAGAAGTCCTCTGTCCTCAACCCTGAACCTGAGGGTCCAGGGATCCTGCAA
GTTGAGGCTCTAGAGGCACCCGAGCCTGAAGAAAGCTTTTGGGTCAGAGCATGGAGGTCGTTCATGGGGA
TGCTACAGCGACTGAAGCAGAGGTGGCAGGCTGTACTGGCCTGGGTGCGAGAGAAGGTGGCTGCTGGCTG
GCAGGCCCTATGCAGTGTGGCCCAGTCCATTAATAGTGTGCTTGAGAGTTTCTGCTCCTATATGGCTGGG
TTGTTTAGGTACCACATCCAGGTCTAGGGGGCCCCATGGGGTCCAGGAGGGGTAGCCACACCTTGCAGCC
CTTTGACGTCCCCCTTTTCACAGAGAACCTTCAGAAGTGACCTTTGCCACCTGCCTACCCTTGACCTGTC
CTTGACCACCTCCCTCACCTCCTTGCTGTGCACAGCCTGGCCACCCTGCCCACCATGCACTTCCTGCTCA
GGTTTCCTTCTGCAGGTCTGACTTGTGGCTCCAGCGCATAGTCTT

Fig. 12

A

BoIL-32 beta (SEQ ID NO:17)

MCFAKGVPYDQASLRSIMHKRVDDFCDKMGNEPEEAQMEAALDETEEGLSEDICEFIEDHIQENLPESLQ
ESSPLLQEARQGVRRRIQRPSVSARLEVQNPEESIWARALGRFQVILQSLQQRCWDALTWLREKAVTFLE
AICSVVKAVLGVLTDFCSSVGQLFGNLIQV

B

BoIL-32 beta (SEQ ID NO:21)

CGGATTCCCGGGATGCTCAGCTGGAGCTCTGGCTGCAGGATCTCAGGTCCCTTCGGGAGGACCCTAAGCC
ACCATGTGCTTCGCTAAGGGAGTCCCATATGACCAGGCTTCTCTGAGGTCCATAATGCACAAACGGGTGG
ATGATTTCTGTGATAAGATGGGAAATGAACCAGAAGAAGCACAGATGGAGGCAGCCCTAGATGAGACGGA
GGAGGGACTCAGCGAGGACATCTGTGAATTCATAGAAGATCACATTCAAGAGAACCTTCCCGAATCCCTG
CAGGAGTCCAGTCCCTTGCTTCAGGAAGCACGGCAAGGAGTACGCCGCAGAATCCAGAGACCTTCAGTCT
CTGCCCGTCTGGAGGTCCAGAATCCGGAAGAGAGCATCTGGGCCAGAGCCCTGGGGAGGTTCCAAGTAAT
TCTGCAGAGTCTCCAGCAGCGGTGTTGGGATGCGCTCACCTGGCTGCGGGAGAAGGCGGTGACCTTCCTG
GAGGCCATCTGCAGTGTGGTGAAGGCCGTCTTGGGAGTGCTGACGGATTTCTGCTCCTCTGTGGGGCAGC
TCTTCGGAAACCTCATCCAGGTCTAGGAGCCGCAGGTGGTTCTGGAGGAACTCCTCCTCATCTAGGAGGC
CCTGCACCATCCCCTTCCCAGAAACCATCTTGTGAAGCGACCTTTGCACTCCTGCTCACCCTTGACCCAT
CCTTTAACTGCCCTCACCTCCTGT

C

BoIL-32 gamma (SEQ ID NO:22)

MCFTKRDPRVLASFRVLMVRSSFPRIAGVREAWVLLGEAENILAHLGPSREKNRDSFTQVHLCSQHNLVD
EFFDTMENEPEGAQMEAVLAETKEKFIKDAFKVMDNHIQENSPETLKESSPLLQEARQEVRCRIQRRSVS
TSLEVQNPEESIWARALRQFLGILQSFLSGCRDALTWLWEKAAACLQAICSAVEALWEVLTDFCSFVGQL
LCRSLIQV

D

BoIL-32 gamma (SEQ ID NO:23)

CGGGATCTCAGCTGGAGCTCTGGCTGCAGGATCTCAGGTCCCAGCGGCAGGACCCTAAGCCACCATGTGC
TTCACTAAGAGAGACCCACGTGTCCTGGCTTCTTTCAGGGTGTTAATGGTAAGAAGCTCATTTCCACGTA
TAGCTGGGGTTCGGGAGGCCTGGGTTCTGCTGGGTGAAGCTGAGAACATTCTGGCCCACTTGGGACCCAG
CAGGGAGAAGAACCGAGATTCTTTTACTCAAGTCCATCTCTGTTCACAGCACAACCTTGTAGATGAATTT
TTCGATACAATGGAAAATGAACCAGAAGGAGCACAGATGGAGGCAGTCCTAGCAGAGACTAAGGAGAAAT
TCATCAAGGACGCCTTTAAAGTCATGGATAATCACATTCAAGAGAACAGTCCCGAAACCCTGAAGGAGTC
CAGTCCCTTGCTTCAGGAAGCACGGCAAGAAGTACGCTGCAGAATCCAGAGACGCTCCGTCTCCACCTCT
CTGGAGGTCCAGAATCCGGAAGAGAGCATCTGGGCCAGAGCCCTGCGGCAGTTCTTGGGCATTCTGCAGA
GTTTCCTGTCCGGGTGTCGGGATGCGCTCACCTGGCTGTGGGAGAAGGCCGCGGCCTGCCTACAGGCCAT
CTGCAGTGCGGTGGAGGCCCTCTGGGAAGTGCTCACGGATTTCTGCTCCTTTGTTGGGCAGCTCTTATGC
AGAAGCCTCATCCAGGTCTAAGAGCCTCACATGGTTCTGGAGGAGCCCCACCTCATTCAGAAGGCCCTGT
ACGATGCCCTTCCCGGAAACCATCTTCTGAAGCGACCTTTACCCTCCTGCTCACCCTTGACCCATCCTTT
AACTGCCCTCCCCTCCTGTCCTG

Fig. 13

A

OvIL-32 alpha (SEQ ID NO:24)

MCFARGVPHDQASLRSMLHTWVDHVCDKMGNEPEEAQMEAALAEMEEELSKDVCESWKITFKRTFPNPCR
SPVPCFRKRSKKYAAESRDPQSLPVWRTRNRKRASGPEPCGGSEVFCGVSGSGVAMY

B

OvIL-32 alpha (SEQ IDO:25)

CTGCGGTACCGGTCCGGATTCCCGGGCGAGACAGTGCTCAGCTGGAGCTCTGGCTGCAGGATCTCAGATC
CCAGCCGGAGGACCCTAATCCACCATGTGCTTCGCTAGGGGAGTCCCACATGACCAGGCTTCTCTGAGGA
GCATGCTGCACACCTGGGTGGATCATGTCTGTGATAAGATGGGAAATGAACCAGAAGAAGCACAGATGGA
GGCAGCCCTAGCAGAGATGGAGGAGGAACTCAGCAAGGATGTCTGTGAATCATGGAAGATCACATTCAAG
AGAACCTTCCCGAATCCCTGCAGGAGTCCAGTCCCTTGCTTCAGGAAGCGCAGCAAGAAGTACGCCGCAG
AATCCAGAGACCCTCAGTCTCTGCCTGTCTGGAGGACCAGAAACCGGAAGAGAGCATCTGGGCCAGAGCC
CTGCGGCGGTTCCGAGGTTTTCTGCGGAGTCTCTGGCAGCGGTGTTGCGATGTACTGACCTGGCTGCAGG
AGAAGGCGGCGGCCTGCCTGGAGGCCGTCTGCAGTGCGGTGAAGACCATCTGGGGAGTGCTGACGGATTT
CTGCTCCTCTGTGGGGCAGCTCTTCAGAAACCTCATCCAGGTCTAGGAGCCCCAGGTCGTTCTTGAGGAA
CTGCTCCTCATCTAGAAGGCCCTGCACAATCCCCTTCCCAGAAACCATCTTCTGAAGCGACCTTTACCCT
CCTGTTCACCCTTCACCAATCCTTTAACTGCCCTCACCTCCTGTCTGCAGGGACGACACCACAACATCAA
GCCAGGTTTCCCTTCTCCAAGTCTGACCCGTCTGTCAGGGA

C

SwIL-32 alpha (SEQ ID NO:26)

MRGVSATRTLPKAGPQPRSGLGLPLPRRVPEPPPIPAESSPLLNEVRQGVRSRVRRPPGHNQPHYALAVR
EPRQSTFRRILELFEEMLKRLQQRWRGALAWVQERAAACFRGLCRALEAFWSLVQSFCSSMGHAFGSVIQ
V

D

SwIL-32 alpha (SEQ ID NO:27)

ATGACTTGGAGGGGAACTGAGCGGCCAGGCCCAGCCCCTGGGAAAAGTCCTGGGGTCTGTGGGGCTGTTG
GCAGGAAAGCAGCCTGTGTCCAAGGCGGGGCATGAGGGGGGTGTCTGCCACCAGGACTCTCCCAAAGGCA
GGGCCTCAGCCAAGGTCAGGACTGGGGCTGCCTCTCCCCAGGCGGGTCCCTGAACCACCCCCCATCCCTG
CAGAATCCAGTCCTCTGCTCAACGAAGTCCGGCAGGGAGTCCGTTCTAGAGTCCGAAGGCCTCCTGGCCA
CAACCAGCCACATTATGCGCTAGCGGTCCGGGAGCCCAGGCAGAGCACTTTCAGACGCATCCTTGAGCTG
TTTGAGGAAATGCTGAAGCGCCTGCAGCAGAGGTGGAGGGGTGCCCTGGCTTGGGTGCAGGAAAGGGCTG
CTGCCTGCTTCCGGGGCTTGTGCAGGGCCCTTGAAGCTTTCTGGAGCCTGGTGCAGAGTTTTTGCTCCTC
CATGGGGCACGCCTTCGGGAGTGTCATCCAGGTCTAAGGTGCTCCAGGTGAAATAAGAGTTTCTAGAGCA
CAACCTCCCCCTGCCTTGGCTAAAAAGGCAGCTGTAAGCCTTT

Fig. 14